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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,433	06/27/2003	Richard T. Oesterreicher	IVBU-0126	7933

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EXAMINER	
TSAI, SHENG JEN	
ART UNIT	**PAPER NUMBER**
2186	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/609,433	OESTERREICHER ET AL.	
	Examiner	Art Unit	
	Sheng-Jen Tsai	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is taken in response to Applicants' Request for Continued examination (RCE) filed on March 7, 2007 regarding application 10,609,433 filed on June 27, 2003.

2. Claims 1, 13 and 22-23 have been amended.

Claims 1-23 are pending under consideration.

3. ***Response to Remarks and Amendments***

Applicants' amendments and remarks have been fully and carefully considered.

Independent claims 1, 13 and 22-23 have been amended to include the new limitation of "**... providing a hot-swappable adaptable cache inside said media server, said adaptable cache hot-swappably connected to the first input-output bus, ...**"

In response to this amendment, a new ground of claim analysis based on newly identified reference (O'Rourke et al., US 6,986,018) has been made. Refer to the corresponding sections of claim analysis for details.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (US 7,043,558), in view of Olarig et al. (US Patent Application Publication 2004/0024941), and further in view of O'Rourke et al. (US 6,986,018).

As to claim 1, Yoshida et al. disclose **a method for reducing bus traversal** [Data Communication Apparatus and Data Communication Method (title)] **in a media server** [figure 2 shows the medium server system, including a media server (2) and a cache server (1)] **comprising a host processor** [The cache server 1 can be implemented by, for example, a computer having a CPU such as a micro-processor, a recording unit such as a semiconductor memory, a magnetic disk, and a communication unit, not shown in the figure. The recording unit stores a program for implementing functions of each element included in the cache server 1, the CPU can control the operation of the cache server 1 by reading the program, which enables to implement the function of each element (column 7, lines 38-45)], **a network interface** [figure 1 shows that the media server system is connected to serve a plurality of clients (3) via a network (4), hence must have a network interface], **and a storage subsystem comprising one or more storage devices** [the media file storing unit (figure 2, 103)], **the host processor and network interface being connected to a first input-output bus** [the first input-output bus is shown in figure 2, left-hand side, as the bus connecting the cache server (1) and the client (3) to support "delivery request" and "streaming delivery (in case of hit)"], **the storage subsystem being connected to a second input-output bus** [the second input-output bus is shown in figure 2, right-hand side, as the bus connecting the cache server (1) and the storage unit (103) to

support "delivery request," "file obtainment" and "file transmission request"], **the first and second input-output buses being connected via a controller** [the corresponding controller is the cache server (figure 2, 1)], **the method comprising**: **providing a hot-swappable adaptable cache inside said media server** [the corresponding adaptable cache comprises the cache server unit (figure 2, 1); the hot-swappable aspect is taught by Olarig et al.; O'Rourke et al. teach a cache inside media server; see below] **said adaptable cache hot swappably connected to the first input-output bus** [figures 2-9], **said adaptable cache comprising a data interface** [the file streaming delivery unit (figures 2-9, 19)], **core logic** [comprising the cache checking unit (figures 2-9, 10), the band controlling unit (figure 3, 14), the access frequency checking unit (figure 5, 18) and the band dynamically controlling unit (figure 6, 15)] **configured to dynamically alter its operating characteristics by modification of a caching rule to account for asset request frequency without disconnecting said adaptable cache from the media server and electronic storage media** [The access frequency checking unit 18 increments its value by 1 every time the client 3 issues the delivery request for the media file to the media server 2 and stores the delivery request for the media file. Further, at this time, if the number of delivery requests in a predetermined past time period is counted, the access frequency checking unit 18 can deal with the reduction of the frequency of access to the media file as time passes (column 11, lines 43-50); The band dynamically controlling unit 15 observes the bandwidth of the network used for obtaining the media file from the media server 2 by the media file obtaining unit 17 and dynamically

determines a transmission rate according to the fluctuation in the bandwidth (column 12, lines 45-49); The data communication apparatus further includes a communication rate dynamically setting unit for dynamically setting a communication rate used for receiving the requested information data file by the file receiving unit when the file receiving unit receives the requested information data file, and in the data communication apparatus, the file receiving unit receives the requested information data file at the communication rate dynamically set by the communication rate dynamically setting unit (column 4, lines 35-44)];

receiving a request for a media asset via a network [figures 2-9, "delivery request" originated from a client (3) is received by the cache checking unit (10) via a network (figure 1, 4)]**, said request being received by the network interface** [figure 1 shows that the media server system is connected to serve a plurality of clients (3) via a network (4), hence must have a network interface];

receiving the request at the adaptable cache [figures 2-9, cache checking unit and the cache file storing unit; abstract];

processing the request by the adaptable cache [A client sends a delivery request for a streaming delivery of a specific media file to a media server, and a cache checking unit of the cache server checks if the requested media file is stored in a cache file storing unit as a cache file. If it is stored, a file streaming delivering unit performs the streaming delivery to the client using the cache file. If not stored, the cache checking unit transfers the delivery request to the media server, and the media server performs the streaming delivery, and in parallel with the streaming delivery, at

the cache server, a media file obtaining unit obtains the requested media file from the media server and stores the requested media file in the cache file storing unit (abstract)], **wherein if the requested media asset is found on the electronic storage media, the media asset is returned to the user via the first bus and not the second bus** [If it is stored, a file streaming delivering unit performs the streaming delivery to the client using the cache file (abstract); figures 2-9, the data path associated with the "in case of hit"], **and wherein if the requested media asset is not found on the electronic storage media, the media asset is accessed from the storage subsystem and returned to the user via the second bus and first bus** [If not stored, the cache checking unit transfers the delivery request to the media server, and the media server performs the streaming delivery, and in parallel with the streaming delivery, at the cache server, a media file obtaining unit obtains the requested media file from the media server and stores the requested media file in the cache file storing unit (abstract); figures 2-9, the data path associated with the "in case of mis-hit"].

With respect to claim 1, Yoshida et al. do not mention **providing a cache that is hot-swappable**.

However, Olarig et al. teach in their invention "Method and Apparatus for Supporting Hot-Plug cache Memory" a method and apparatus to allow cache memory modules to be inserted and/or removed without shutting down the power of the system.

Hot insertion and removal of cache memory devices allows the system to continue its operation while replacing a faulty component, thus increase the throughput of the system.

Therefore, it would have been obvious for one of ordinary skills in the art at the time of Applicant's invention to recognize the benefits of hot-swappable cache memory components, as demonstrated by Olarig et al., and to incorporate it into the existing apparatus disclosed by Yoshida et al. to further enhance the throughput of the system.

With respect to claim 1, Yoshida et al. do not mention that **the cache is inside the media server**.

However, O'Rourke et al. teach in their invention "Method and Apparatus for Selecting Cache and Proxy Policy" a method and apparatus where a cache module is inside a media server [the corresponding media server is the cache server shown in figure 2, 204 and figure 3, 254; figure 4 shows that the media server contains a cache module (302) as well as a media serving engine (308)].

O'Rourke et al. further teach that the motivation of incorporating a cache serving module inside the media server is to distribute the media contents to many local clients via a high-speed network connection to avoid having to download the content from the original server [column 1, lines 58-67], hence reduces the delivery latency.

Therefore, it would have been obvious for one of ordinary skills in the art at the time of Applicant's invention to recognize the benefits of incorporating a cache serving module inside the media server, as demonstrated by O'Rourke et al., and to

incorporate it into the existing apparatus disclosed by Yoshida et al. to further reduces the delivery latency.

As to claim 2, Yoshida et al. teach that **the request is received at the adaptable cache via the host processor** [The cache server 1 can be implemented by, for example, a computer having a CPU such as a micro-processor, a recording unit such as a semiconductor memory, a magnetic disk, and a communication unit, not shown in the figure. The recording unit stores a program for implementing functions of each element included in the cache server 1, the CPU can control the operation of the cache server 1 by reading the program, which enables to implement the function of each element (column 7, lines 38-45)].

As to claim 3, Yoshida et al. teach that **the request is receive' d at the adaptable cache directly from the network interface** [figure 1 shows that the media server system is connected to serve a plurality of clients (3) via a network (4), hence must have a network interface].

As to claim 4, Yoshida et al. teach that **the adaptable cache is integrated with the network interface** [figure 1 shows that the cache is integrated as part of the network interface unit].

As to claim 5, Yoshida et al. teach that **the adaptable cache is integrated in the controller** [The cache server 1 can be implemented by, for example, a computer having a CPU such as a micro-processor, a recording unit such as a semiconductor memory, a magnetic disk, and a communication unit, not shown in the figure. The recording unit stores a program for implementing functions of each element included in

the cache server 1, the CPU can control the operation of the cache server 1 by reading the program, which enables to implement the function of each element (column 7, lines 38-45)].

As to claim 6, Yoshida et al. teach that **the adaptable cache monitors requests for media assets and if it is determined that the media asset should be cached, the media asset is transferred from one or more storage devices to the electronic storage media** [If not stored, the cache checking unit transfers the delivery request to the media server, and the media server performs the streaming delivery, and in parallel with the streaming delivery, at the cache server, a media file obtaining unit obtains the requested media file from the media server and stores the requested media file in the cache file storing unit (abstract)].

As to claim 7, Yoshida et al. teach that **the adaptable cache monitors requests for media assets and if it is determined that the media should be cached, the adaptable cache notifies requesting applications that it can accept future requests for said media assets** [If not stored, the cache checking unit transfers the delivery request to the media server, and the media server performs the streaming delivery, and in parallel with the streaming delivery, at the cache server, a media file obtaining unit obtains the requested media file from the media server and stores the requested media file in the cache file storing unit (abstract); The data communication apparatus further includes a communication rate dynamically setting unit for dynamically setting a communication rate used for receiving the requested information data file by the file receiving unit when the file receiving unit receives the requested

information data file, and in the data communication apparatus, the file receiving unit receives the requested information data file at the communication rate dynamically set by the communication rate dynamically setting unit (column 4, lines 35-44)].

As to claim 8, Yoshida et al. teach that **the adaptable cache monitors requests for media assets and if it is determined that the media should be cached, the adaptable cache notifies the storage subsystem to disregard requests to deliver the media** [If it is stored, a file streaming delivering unit performs the streaming delivery to the client using the cache file (abstract)].

As to claim 9, Yoshida et al. teach that **if the requested media asset is not found on the electronic storage media, the adaptable cache stores the requested media asset on the electronic storage media** [If not stored, the cache checking unit transfers the delivery request to the media server, and the media server performs the streaming delivery, and in parallel with the streaming delivery, at the cache server, a media file obtaining unit obtains the requested media file from the media server and stores the requested media file in the cache file storing unit (abstract)].

As to claim 10, Yoshida et al. teach that **the adaptable cache integrates into the media server via an expansion card slot** [figure 7 shows that the components of the adaptable cache are modularized to be ready to be plugged into a PCI bus; further, it is also possible to integrate the processor (i.e., the controller, figure 7, 21), the NIP local memory (i.e., the cache, figure 7, 22) and the PCI bus (figure 7, 26) into an ASIC called bridge chip (column 5, lines 1-12). Hence the adaptable cache can be made an expansion card to be plugged into a slot on a PCI bus].

As to claim 11, Yoshida et al. teach **the adaptable cache integrates with native communications busses and protocols existing on the media server** [execute protocols in order to communications using HTTP and TCP/IP (column 1, lines 27-34; column 5, lines 15-20)].

As to claim 12, Yoshida et al. teach **the adaptable cache utilizes the busses and protocols existing on the media server** [execute protocols in order to communications using HTTP and TCP/IP (column 1, lines 27-34; column 5, lines 15-20)].

As to claim 13, refer to "As to claim 1."

As to claim 14, refer to "As to claim 13."

As to claim 15, refer to "As to claim 10."

As to claim 16, refer to "As to claim 9."

As to claim 17, refer to "As to claim 6."

As to claim 18, refer to "As to claim 7."

As to claim 19, refer to "As to claim 8."

As to claim 20, refer to "As to claim 11."

As to claim 21, refer to "As to claim 12."

As to claim 22, refer to "As to claim 1."

As to claim 23, Yoshida et al. teach **a method of simulating passive monitoring of a bus by a first component in a media server** [figure 1, 103], **comprising**:

identifying a second component [the corresponding second component is one of the clients A, B or C (figure 8, 3)] **that transmits messages** [the delivery request message] **to a third component** [the corresponding third component is the media server (figure 8, 2)], **said messages desired to be monitored by the first component** [the delivery request message is monitored by the cache data checking unit (figure 8, 10) of the cache server (figure 8, 1), the cache server is the corresponding first component], **wherein said first component comprises a hot-swappable adaptable cache inside a media server, said adaptable cache hot-swappably connected to a bus inside said media server** [the hot-swappable aspect is taught by Olarig et al, refer to "As to claim 1;" O'Rourke et al. teach a cache inside media server, refer to "As to claim 1"], **said adaptable cache comprising a data interface** [the streaming data delivering unit (figure 8, 12) and file streaming delivering unit (figure 8, 19)], **core logic** [comprising the cache checking unit (figures 2-9, 10), the band controlling unit (figure 3, 14), the access frequency checking unit (figure 5, 18) and the band dynamically controlling unit (figure 6, 15)] **configured to dynamically alter its operating characteristics by modification of a caching rule to account for asset request frequency without disconnecting said adaptable cache from the media server and electronic storage media** [The access frequency checking unit 18 increments its value by 1 every time the client 3 issues the delivery request for the media file to the media server 2 and stores the delivery request for the media file. Further, at this time, if the number of delivery requests in a predetermined past time period is counted, the access frequency checking unit 18 can deal with the reduction of

the frequency of access to the media file as time passes (column 11, lines 43-50); The band dynamically controlling unit 15 observes the bandwidth of the network used for obtaining the media file from the media server 2 by the media file obtaining unit 17 and dynamically determines a transmission rate according to the fluctuation in the bandwidth (column 12, lines 45-49); The data communication apparatus further includes a communication rate dynamically setting unit for dynamically setting a communication rate used for receiving the requested information data file by the file receiving unit when the file receiving unit receives the requested information data file, and in the data communication apparatus, the file receiving unit receives the requested information data file at the communication rate dynamically set by the communication rate dynamically setting unit (column 4, lines 35-44)]; **and**

adapting the second component to address the message to both the third component and the first component [figure 8, the clients send delivery requests to the cache server, which causes the cache server sends delivery requests to the media server in case of a "mis-hit"].

6. ***Related Prior Art of Record***

The following list of prior art is considered to be pertinent to applicant's invention, but not relied upon for claim analysis conducted above.

- Asano et al., (US 6,327,614), "Network Server Device and File management System Using cache Associated with Network Interface Processors for Redirecting Requested Information between Connection Networks."

- Amini et al., (US Patent Application Publication 2003/0055910), "Method and Apparatus to Manage Data on a Satelite Data Server."
- Dekoning, (US 6,148,368), "Method for Accelarating Disk Array Write Operations Using Segmented cache memory and Data Logging."
- Ofer, (US 6,189,080), "Minimum Read Rate Throughput in a Disk Cache System."
- Gotoh et al., (US 6,728,850), "Storage Control System."
- Anderson, (US 5,561,823), "Monitor System for Determining the Available Capacity of a Read Buffer and a Write Buffer in a Disk Drive System."
- Lasker et al., (US 5,586,291), "Disk Controller with Volatile and Non-Volatile Cache Memories."
- Lautzenheiser, (US 5,353,430), "Method of Operating a Cache system Including Determining an Elapsed Time or Amount of Data Written to Cache Prior to Writing to Main Storage."
- Singh, (US 6,665,704), "Bounding Delays and Reducing Threading Overheads in caching."
- Strothmann et al., (US Patent Application Publication 2004/0093288), "Methods and Systems for Pricing an Inventory Unit."
- Jilk, Jr. et al., (US Patent Application Publication 2002/0010746), "System, Method, Apparatus and Computer Program Product for Operating a Web Site by Electronic Mail."

- Hu et al., (US 6,535,518), "System for Bypassing a Server to Achieve Higher Throughput between Data Network and Data Storage System."
- Young et al., (US 5,761,458), "Intelligent Bus Bridge for Input/Output Subsystem in a Computer System."

Conclusion

7. Claims 1-23 are rejected as explained above.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheng-Jen Tsai whose telephone number is 571-272-4244. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sheng-Jen Tsai
Examiner
Art Unit 2186

March 19, 2007

PIERRE BATAILLE
PRIMARY EXAMINER
3/23/07